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			WOOD, WILLIAM H	
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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/746,157

Applicant(s)

GREEN ET AL.

Examiner

William H. Wood

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 February 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-50 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-7, 11-14, 17, 19-25, 27-29, 31-33, 38, 41, 42 and 46-50 is/are rejected.
- 7) ☐ Claim(s) 8-10, 15, 16, 18, 26, 30, 34-37, 39, 40 and 43-45 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 March 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claims 1-50 have been examined and are pending.

Priority

1. Applicant's claim for domestic priority under 35 U.S.C. 119(e) is acknowledged.

Drawings

2. The drawings submitted were approved by the draft person.

Specification

3. The disclosure is objected to because of the following informalities: missing application information in lines 12-13 of page 1 of the specification. Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 22-45 and 49 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Independent base claim 22 either recites a method or an "extensible N-tiered software application" *comprising* one processing unit, one memory store, various rules, and structures (lines 1-11 of the claim). However, it is unclear how a method can comprise real-world elements (such as a processor). It is also unclear how software could comprise such elements. Appropriate correction is required.

Claim Rejections - 35 USC § 103

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6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-7, 11-14, 17, 19-25, 28, 29, 31-33, 38, 41, 42 and 46-50 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Butterworth** et al. (USPN 5,457,797) in view of **Free** et al., "Automated Support for Software Development with Frameworks".

Claim 1

Butterworth disclosed a computing system for creating an extensible N-tiered software application (*column 5, lines 9-15*), comprising:

- ♦ a. at least one processing unit (*inherent to executable application software*);
- ♦ b. at least one memory store operatively connected to the processing unit (*inherent to executable application software*);
- ♦ c. extensible N-tiered creation software (*column 5, lines 9-15*), executable within the at least one processing unit, comprising a plurality of predetermined extensible N-tier architecture rules (*column 5, lines 22-24*); and
- ♦ d. at least one extensible tier, capable of residing in the memory store (*column 25, lines 30*), further comprising:

Butterworth did not explicitly state extensible tier comprising: a framework that specifies a basic design structure for software components categorized as belonging to

the extensible tier, the framework further comprising base software components and a set of standard interfaces for any software component categorized as belonging to the tier; and a logically grouped set of a predetermined number of executable software components compliant with the tier framework, each software component further capable of communicating with at least one other software component. **Free** demonstrated that it was known at the time of invention to utilize frameworks of components for application development (Abstract), along with standard interfaces (page 124, section 2.1) and standard predetermined components (Abstract). It would have been obvious to one of ordinary skill in the art at the time of invention to implement **Butterworth's** partitionable tier system with tier frameworks and standard components and interfaces as found in **Free's** teaching. This implementation would have been obvious because one of ordinary skill in the art would be motivated to provide an improved productivity and software development automation (**Free**: Abstract).

Claim 2

Butterworth and **Free** disclosed the computing system of claim 1 further comprising a communications network, operatively in communication with the processing unit (column 11, line 63 to column 12, line 19). **Butterworth** and **Free** did not explicitly state the communications network selected from the group of networks consisting of local internal networks, local area networks, asynchronous networks, synchronous networks, and wide area networks. Official Notice is taken that it was known at the time of invention to make use of the above said network types. It would have been obvious to

one of ordinary skill in the art at the time of invention to implement **Butterworth** and **Free**'s system with the said networks. This implementation would have been obvious because one of ordinary skill in the art would be motivated to provide the development environment to N-tier applications in all commonly known environments.

Claim 3

Butterworth and **Free** disclosed the computing system of claim 1 wherein communication between the software components comprises asynchronous communications (**Butterworth**: column 12, line 20 to column 16, line 14; column 7, line 67 to column 8, line 8; column 18, lines 18-23; column 18, line 65 to column 19, line 3).

Claim 4

Butterworth and **Free** disclosed the computing system of claim 1 further comprising an inventory of software components (**Free**: Abstract, first paragraph).

Claim 5

Butterworth and **Free** disclosed the computing system of claim 1 wherein the at least one extensible tier is a set of extensible tiers (**Butterworth**: column 11, lines 63-67), further comprising a set of logical connections comprising sequencing and messaging information between a first one of the extensible tiers and at least one other tier of the extensible set of tiers, whereby each tier in the extensible set of tiers is capable of

communicating with any other tier through one or more tier interfaces (**Butterworth**: column 13, line 40 to column 14, line 4; and inherent to tier architecture).

Claim 6

Butterworth and **Pree** disclosed the computing system claim 5 wherein the set of extensible tiers comprises a base tier comprising a base tier framework, the base tier framework comprising:

- ♦ a. at least one collection interface for collecting software components (**Pree**: page 123, section 1, frameworks made of components), including software components which are normally aggregated into other software components (**Pree**: page 123, last two paragraphs left column, varying combinations of components);
- ♦ b. at least one connection interface for connecting software components as sources or sinks of information (**Pree**: page 124, section 2.1, interface);

Butterworth and **Pree** did not explicitly state message-based interface behavior and control interface. However, Official Notice is taken that it was known at the time of invention to implement such interfaces as messaging and device controlling. It would have been obvious to one of ordinary skill in the art at the time of invention to implement **Butterworth** and **Pree**'s tier/framework development system with message and control interfaces. This implementation would have been obvious because one of ordinary skill in the art would be motivated to use commonly known techniques for developing software (ie. messaging is known and so is controlling devices).

Claim 7

Butterworth and **Free** disclosed the computing system of claim 5 wherein the set of extensible tiers comprises a business rules tier, a processing tier, a data tier, a messaging tier, a business objects tier, a visual tier, a base tier, a real-time device tier, an interceptor tier, and an application tier (**Butterworth**: column 12, line 20 to column 16, line 14; column 7, line 67 to column 8, line 8).

Claim 11

Butterworth and **Free** disclosed the system of claim 7 wherein the data tier comprises a data tier framework and provides data persistence services for a predetermined set of software components and access to data (**Butterworth**: column 14, line 38 to column 16, line 14; Figure 14), the data tier framework further comprising:

- ♦ a. a data modification interface whereby data may be written to and read from a data source (**Butterworth**: Figure 14, Data element); and
- ♦ b. a data access interface whereby access may be provided to specific types of data (**Butterworth**: column 14, lines 63-66).

Claim 12

Butterworth and **Free** disclosed the system of claim 7 wherein the messaging tier further comprises a messaging tier framework and messaging software components to convey information from a source of messages to a recipient of messages

(**Butterworth**: column 7, line 67 to column 8, line 8; column 10, lines 21-26), the messaging tier framework further comprising:

- ♦ a. a message generation interface (**Butterworth**: column 18, lines 18-28);
- ♦ b. a message queuing interface (**Butterworth**: column 20, line 29 to column 22, line 6);
- ♦ c. a message routing interface (**Butterworth**: Figure 4);
- ♦ d. a message text management interface (**Butterworth**: column 20, lines 37-41);
- ♦ e. a message routing interface whereby one or more software components that will receive a message may be specified (**Butterworth**: column 20, line 29 to column 22, line 6); and
- ♦ f. a message queue interface whereby information about a specific queue may be specified (**Butterworth**: column 20, lines 15-19);
- ♦ g. wherein the messaging software components control message queuing and notification, and support message generation for different types of messages (**Butterworth**: column 21, lines 56-59; and column 20, lines 34-36).

Claim 13

Butterworth and **Free** disclosed the method of claim 12 wherein the messaging tier interface supports asynchronous messaging (**Butterworth**: column 12, line 20 to

*column 16, line 14; column 7, line 67 to column 8, line 8; column 18, lines 18-23;
column 18, line 65 to column 19, line 3).*

Claim 14

Butterworth and **Free** disclosed the system of claim 7 wherein the business components tier further comprises:

- ♦ a. at least one business software component, the business software component comprising a general purpose data container providing storage for and access to information (*database*), the business software component further encapsulating attributes comprising data and behavior for a business entity (**Butterworth**: *column 10, line 47 to column 11, line 17*); and
- ♦ b. a business software component framework, comprising:
 - ♦ i. a model comprising a collection of related business software components to reflect a real-world business entity (**Butterworth**: *column 10, line 47 to column 11, line 17; and column 12, line 20 to column 16, line 14*); and
 - ♦ ii. a binary large object to allow storage of large amounts of data within the business software component (**Butterworth**: *column 18, lines 10-28; and database*).

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Claim 17

Butterworth and **Free** disclosed the system of claim 14 wherein the modal further comprises a set of business software components model interfaces that the business software components aggregate to achieve specific functionality (**Butterworth**: column 17, lines 4-11).

Claim 19

Butterworth and **Free** disclosed the system of claim 7 further comprising a visual tier to provide display of and user interaction with information, the visual tier using a model, view, and controller design pattern (**Butterworth**: column 15, line 36 to column 16, line 14) comprising:

- ♦ a. a modeler comprising data and computational logic to handle user interaction, the modeler further comprising an event handler, a connection source, and a connection sink (**Butterworth**: column 15, lines 36-60);
- ♦ b. a viewer comprising data and computational logic to present at least a portion of a model perceptively to a requestor, the view component further comprising an event handler and a connection source (**Butterworth**: column 15, lines 36-60); and
- ♦ c. a controller comprising data and computational logic to handle requestor interaction, the requestor interaction further comprising actions from an input device, the controller component further comprising an event handler, a

connection source, and a connection sink (*Butterworth: column 15, line 61 to column 16, line 14*);

- ♦ d. wherein the modeler, the viewer, and the controller may utilize a messaging tier whereby each of the modeler, the viewer, and the controller can have one or more message handlers attached to provide additional behavior, the modeler and the controller having different message handlers attached to effect differing behavior (*Butterworth: column 15, line 61 to column 16, line 14*).

Claim 20

Butterworth and **Pre** disclosed the system of claim 19 wherein the visual tier further comprises:

- ♦ b. an editing mode, whereby users may edit models as well as view them (*Butterworth: column 15, lines 36-60*);

Butterworth and **Pre** did not explicitly teach read-only mode or optional read-only mode. However, Official Notice is taken that it was known at the time of invention to utilize a read-only mode and for it to be selectable. It would have been obvious to one of ordinary skill in the art at the time of invention to implement the multi-tier development system of **Butterworth** and **Pre** with a visual tier with selectable read-only mode. This implementation would have been obvious because one of ordinary skill in the art would be motivated to provide a mechanism commonly used to protect sensitive data (in the

example above from **Butterworth**, perhaps a customer should be prevented from placing an order unless authorized sales personnel is present).

Claim 21

Butterworth and **Free** disclosed the system of claim 7 wherein the real-time device tier further comprises:

- ♦ a. a communication interface (***Butterworth**: column 13, line 41 to column 14, line 4*); and
- ♦ b. an event-handling interface (***Butterworth**: column 13, line 41 to column 14, line 4*);
- ♦ c. whereby a real-time device can communicate with connected software components to support communication with and event handling for a real-time device (***Butterworth**: column 13, line 41 to column 14, line 4*).

Claim 22

Butterworth disclosed the method for generating a software application in a computing system for creating an extensible N-tiered software application comprising at least one processing unit; at least one memory store operatively connected to the processing unit (*Figures 1-10*); extensible N-tiered software (*column 5, lines 9-40; column 16, line 37 to column 19, line 35*), comprising tier rules (*column 5, lines 16-35; lines 21-23*), and application assembly rules (*column 16, lines 43-49*), the N tiered software being executable within the at least one processing unit (*Figures 1-10*); and a predetermined set of initial extensible tiers capable of residing in the memory store, each tier of the

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predetermined set of extensible tiers having a given structure, the set of extensible tiers further comprising a logically grouped set of a predetermined number of the executable software components (*column 12, line 20 to column 16, line 14; column 7, line 67 to column 8, line 8*), the method comprising:

- ♦ a. determining a set of application requirements (*column 16, lines 43-49*);
- ♦ d. defining a set of tiers to logically model the application requirements (*column 5, lines 9-55; and column 12, line 20 to column 16, line 14*);
- ♦ e. selecting tiers from the predetermined set of tiers to satisfy the defined set of tiers (*column 5, lines 21-23; column 12, line 20 to column 16, line 14*);
- ♦ f. for tiers not within the predetermined set of tiers needed to satisfy the defined set of tiers, creating new tiers (*column 5, lines 25-35*);
- ♦ h. creating a software application by assembling the predetermined set of tiers according to the application assembly rules (*column 17, lines 26-33; column 12, line 20 to column 16, line 14*);
- ♦ i. whereby the software application satisfies the set of application requirements (*column 16, lines 43-49*).

Butterworth did not explicitly state predetermined set of software component rules; an inventory of executable software components, each software component further comprising a given structure and an external interface and further capable of communicating with at least one other software component; for each of the set of application requirements, reviewing the inventory of software components for software components that match at least one of the set of application requirements; for each

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application requirement in the set of application requirements for which a software component match does not exist in the software component inventory, obtaining a software component that does match that application requirement; and associating each of the matching software components with at least one tier of the defined set of tiers according to a framework associated with that tier. **Free** demonstrated that it was known at the time of invention to utilize libraries of interchangeable components, either new or existing in order to full fill an application or "tier" (individual applications) requirements (entire document). It would have been obvious to one of ordinary skill in the art at the time of invention to implement **Butterworth's** tier development system with frameworks (component rules, inventories of components new and existing for requirements; and associating components with at least one tier "application zone") as found in **Free's** teaching. This implementation would have been obvious because one of ordinary skill in the art would be motivated to provide an improved productivity and software development automation (**Free**: Abstract).

Claim 23

Butterworth and **Free** disclosed the method of claim 22 wherein obtaining a software component that does match that application requirement further comprises selectively modifying an existing software component or procuring and selectively modifying a new software component from an independent source of software components to comply with a tier's framework requirements (**Butterworth**: column 17, lines 4-11; and **Free**: Abstract and page 123, left column, last two paragraphs).

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Claim 24

Butterworth and **Free** did not explicitly state the method of claim 22 further comprising:

- a. examining the obtained software components for incorporation into the software component inventory according to predetermined incorporation criteria; and
- b. storing the obtained software component in the software component inventory if it meets the incorporation criteria. Official Notice is taken that it was known at the time of invention to acquire correct version of components. It would have been obvious to one of ordinary skill in the art at the time of invention to implement the tier development system of **Butterworth** and **Free** with acquiring correct versioned components and not keeping them if they are incorrect. This implementation would have been obvious because one of ordinary skill in the art would be motivated to provide components which are satisfactorily compatible with other components, in order to function correctly.

Claim 25

Butterworth and **Free** disclosed the method of claim 22, wherein at least one of the software components is a business software component, further comprising automatically retrieving composite software components along with an associated business software component when the associated business software component is retrieved from a persistent store (**Butterworth**: column 17, lines 4-11).

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Claim 28

Butterworth and **Free** disclosed the method of claim 22 further comprising:

- ♦ a. defining a testing tier (**Butterworth**: column 19, lines 36-47);
- ♦ b. testing a final model using the testing tier (**Butterworth**: column 19, lines 36-47); and
- ♦ c. correcting errors within the executable software components within the final model (**Butterworth**: column 19, lines 36-47).

Claim 29

Butterworth and **Free** disclosed the method of claim 22 wherein associating is accomplished using a graphical user interface (**Butterworth**: Figure 23).

Claim 31

Butterworth and **Free** disclosed the method of claim 22 further comprising removing a tier, the step comprising:

- a. examining current requirements (**Butterworth**: column 5, lines 16-34; column 16, lines 43-49);
- b. for each current tier, determining if at least one other tier satisfies the requirements (**Butterworth**: column 5, lines 16-34; column 16, lines 43-49);
- c. if so, combining those tiers (**Butterworth**: column 5, lines 16-34; column 16, lines 43-49);
- d. for each remaining tier, determining if the tier is no longer needed to satisfy at least

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one requirement (**Butterworth**: *column 5, lines 16-34; column 16, lines 43-49*); and
e. if so, remove the no longer needed tier (**Butterworth**: *column 5, lines 16-34; column 16, lines 43-49*).

Claim 32

Butterworth and **Free** disclosed the method of claim 22 further comprising defining an initial set of tiers (**Butterworth**: *column 12, line 20 to column 16, line 14; column 7, line 67 to column 8, line 8*).

Claim 33

Butterworth and **Free** disclosed the method of claim 32, wherein the initial set of tiers comprise a business rules tier, a processing tier, a data tier, a messaging tier, a plotting tier, a business objects tier, a visualization tier, a base tier, a real time device tier, an interceptor tier, and an application tier (**Butterworth**: *column 12, line 20 to column 16, line 14; column 7, line 67 to column 8, line 8*).

Claim 38

Butterworth and **Free** disclosed the method of claim 33 further comprising specifying a framework for the real-time device tier to support communication with and event handling for at least one real-time device, the framework comprising properties and methods that support a predetermined communication interface and a predetermined

event-handling interface whereby a real-time device can communicate with connected software components (**Butterworth**: column 13, line 41 to column 14, line 4).

Claim 41

Butterworth and **Free** disclosed the method of claim 33 further comprising:

- ♦ a. specifying a method within the application tier for creating applications that use asynchronous behavior (**Butterworth**: column 12, line 20 to column 16, line 14; column 7, line 67 to column 8, line 8; column 18, lines 18-23; column 18, line 65 to column 19, line 3);
- ♦ b. specifying how software components are created and registered (**Butterworth**: column 16, line 14 to column 22, line 57); and
- ♦ c. specifying how service components are connected (**Butterworth**: column 16, line 14 to column 22, line 57);
- ♦ d. whereby dependencies and communication links are established before an application begins responding to events (**Butterworth**: column 16, line 14 to column 22, line 57; required for proper execution; column 16, lines 43-49).

Claim 42

Butterworth and **Free** disclosed the method of claim 33 further comprising specifying a wizard tier comprising one or more wizards developed for frameworks to insure that proper framework interfaces are implemented for a software component associated with

a tier, whereby the wizard tier may be used during a development process (**Free**:
Abstract, second paragraph, active cookbook and recipes).

Claim 49

Butterworth and **Free** disclose a computer program embodied within a computer-readable medium created using the method of claim 22 (*column 5, lines 9-15*).

Claims 46-48 and 50

The method claims 46-48 and 50 correspond to the method claims 22, 28, 29 and 49 respectively. As such, claims 46-48 are rejected in a corresponding manner as claims 22, 28, 29 and 49 respectively.

8. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Butterworth** et al. (USPN 5,457,797) in view of **Free** et al., "Automated Support for Software Development with Frameworks" as applied to claim 22 and in further view of **Dale** et al. (USPN 6,049,664).

Claim 27

Butterworth and **Free** did not explicitly teach the method of claim 22 wherein software components and tiers are combined at run time to form new, unique applications on-the-fly. **Dale** demonstrated that it was known at the time of invention to implement

on-the-fly runtime tier development (column 2, lines 23-34; column 7, lines 7-11; HTML). It would have been obvious to one of ordinary skill in the art at the time of invention to implement the tier development system of **Butterworth** and **Free** with runtime tier/component configuration as found in **Dale's** teaching. This implementation would have been obvious because one of ordinary skill in the art would be motivated to provide a system of high flexibility (ie. a system which is always able to change).

Allowable Subject Matter

9. Claims 8-10, 15, 16, 18, 26, 30, 34-37, 39, 40 and 43-45 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.


Correspondence Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William H. Wood whose telephone number is (703)305-3305. The examiner can normally be reached 7:30am - 5:00pm Monday thru Thursday and 7:30am - 4:00pm every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kakali Chaki can be reached on (703)305-9662. The fax phone numbers for the organization where this application or proceeding is assigned are (703)746-7239 for regular communications and (703)746-7238 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-3900.

William H. Wood
December 10, 2003


KAKALI CHAKI
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